REMARKS

Claims 13 and 24 were objected to because the Examiner has stated that claims appear to contain a grammatical error. Claim 13 has now been amended to add the word "on" after the word "based" in line 3. However, claim 24 has not been amended since it already contains the aforementioned word, "on."

Claims 11 - 28 were rejected under 35 U.S.C. § 112, 2d ¶ as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. In particular, the Examiner cited claims 11, 17 and 22 in which certain terms had insufficient antecedent basis for the limitation in the claims. Claims 11, 17, and 22 have now been amended to correct the antecedent basis taking particular note of the Examiner's comments. The rejection under 35 U.S.C. § 112, 2d ¶ should now be overcome.

Claims 1 - 6, 8 and 10 - 28 were rejected under 35 U.S.C. § 102(e) as being anticipated by Filo et al. (U. S. Patent No. 6,215,498). The Examiner states that Filo teaches a system for interacting with displays and all devices that use such displays comprising a display, a sensor or camera, a pointing device that can be registered by the sensor or camera, a method for detecting the pointing device and a method for establishing the mapping between the position of the pointing device and a corresponding location of the display.

Claim 1 has been amended to distinguish it from the Filo patent. Claim 1 now requires a pointing device remote from the sensor or camera that can be viewed by the sensor or camera, wherein the sensor or camera operates independently from the pointing device. In the Filo patent, the pointing device is described as two types. One of the pointing devices is a mouse, as shown in Figures 2b and 2c and is well-known in the computer industry. The second is a virtual glove which has sensors imbedded in it to detect hand position. The sensors, or hand tracker 46, is part of the virtual glove and is used to determine the pointer position. The mouse position is determined by the mouse's relative movement on the surface of a desk pad similarly as those used currently. Both types of pointers in Filo have switchable buttons which signal the computer. The switchable button on the mouse is obvious.

The switch activated button in the palm of the user 48 is used with the virtual glove. In both cases, the sensor is a part of or in very close proximity to the pointing device. In contrast, claim 1 requires that the sensor or camera is remote from the pointing device and is not worn by the user as in Filo. Further, the sensor or camera views the pointing device. Also, the sensor or camera of the present invention operates independently from the pointing device, whereas the sensor in Filo is dependent upon the movement of the virtual glove 44.

Regarding claim 2, the Examiner alleges that Filo teaches a system for interacting with displays and all devices that use such displays wherein the sensor or camera, in addition to registering the image of the pointing object, can also register at least one of the image of the display and the reflection or effect that the pointing device can produce on the display. Although claim 2 has been amended to replace the word "registering" with the word "viewing," and also adding "the space around the pointing device," the rejection to claim 2 is traversed. In Filo, the pointer 72 becomes a two-dimensional reference indicator that moves about the screen in response to either the user's hand of movement (via the hand trackers) or optionally the user's mouse operation in case of an operation's level user. Therefore, the movement of a pointer is not a consequence of the remote sensor viewing the pointing device, but instead is a consequence of either the hand position of the user sensed by the hand trackers the user is wearing or the mouse operation.

Regarding claim 4, the Examiner states that Filo teaches a system for interacting with displays and all devices that use such displays wherein a pointing device is a part of the human body such as a hand or a finger or an ornament or device worn on the human body such as a glove or a thimble. Claim 4 has been amended to distinguish from the Filo patent. Now claim 4 requires that the pointing device is a part of the human body of a user such as a hand or a finger, or an ornament or device worn on the human body, such as a glove or a thimble, and wherein the sensor or camera is remote from the human body. Filo does not show or disclose the feature where the pointing device is a part of the human body or attached to the human body wherein the sensor and camera is remote from the human body.

In Filo, the sensor is part of the glove worn by the user. Therefore, claim 4 is believed to be allowable over the prior art.

Claim 5 has now been amended to be dependent upon claim 4.

Regarding claim 11, the Examiner alleges that Filo teaches a method for detecting the pointing device comprising retrieval of data or images from a sensor or camera, an analysis of the data or images from the sensor or camera to locate the pointing device in the data or locating at least a set of the picture elements in the image that comprise the rendition of the pointing device. Regarding the camera, the Examiner cites column 13, lines 57 - 59 in Filo. However, in Filo, the camera is simply recording the changes in the Command Room and not being used to determine the location of the pointing device as required in claim 11. Analysis of the data from the sensor or the camera is not shown or disclosed in Filo for determining the pointing device position. In addition, claim 11 has now been amended to require that the pointing device is remote from the sensor or camera, and to place it in proper format for a method claim. Therefore, claim 11 is believed to be distinguished from the Filo reference.

Rejection of claim 12 is traversed. The Examiner alleges that Filo teaches a method for detecting a pointing device wherein the characteristics that distinguish the pointing device from other objects in the data from the sensor or the image from the camera are known at priori. However, the reference lines at column 19, lines 13 - 67, as pointed out by the Examiner, only reference hand and head trackers. The only head and hand trackers present in the Filo patent are the ones worn on the body of the user. Therefore, in Filo there is no need to locate the pointing device or distinguish the pointing device from other objects in the scene since the hand and head trackers are communicating their readings directly. On the other hand, in the present invention, the sensor or the camera locates the pointing device in the scene using its distinguishing characteristics, such as brightness, color, shape, etc. Therefore, claim 12 is believed to be distinguished over the Filo patent.

The rejection of claims 13 and 14 are traversed. The Examiner alleges that Filo teaches a method for detecting the pointing device wherein the

characteristics that distinguish the pointing device from other objects in the data from the sensor or the image from the camera are determined based on analysis of at least one set of the data acquired from the sensor or one image acquired from the camera and whose renditions are present in the data from the sensor or in the image from the camera is obtained by acquiring at least two sets of data from the sensor or at least two images from the camera, one with the pointing device in view of the sensor or the camera and one without, and comparing the two sets with one another. The Examiner then references Filo at column 14, lines 2 - 17. However, these referenced lines in Filo only talk about virtual V.C.R. making a recording of the initial scene and thereafter only the changes for the data bandwidth savings so many hours of recording can be done. This is unrelated to what is claimed in claims 13 and 14 which have to do with the method for distinguishing characteristics of the pointing device. In claim 14, there is a comparison of two scenes, one with and the other without the pointing device. The requirement of claim 14 has no relationship to detecting changes in the scene to decide whether to record the next frame or not as disclosed in Filo. Therefore, claims 13 and 14 are believed to be allowable.

The rejection of claim 15 is traversed. The Examiner alleges that Filo teaches a method for detecting the pointing device wherein adjustments or modifications are made to the position, sensitivity, and other settings of the sensor or the camera pursuant the analysis of the data or image retrieved from the sensor or the camera. The Examiner references column 17, lines 4 - 17 of Filo. However, these references describe a way to drag icons and activate functions associated with those icons. Filo does not show or disclose any corretions to sensor or camera data acquisition parameters or viewing angles as now required in claim 15.

The Examiner rejects claim 17 and cites Filo at column 19, lines 13 - 67. Claim 17 has been rewritten to more particularly point out what is the invention and to distinguish it from Filo. Claim 17 now requires the steps of defining the range of positions that the pointing device can assume; defining the boundaries of the positions that the pointing device can assume so that a virtual display space comprising (i) a continuous one-dimensional line, or (ii) a continuous two-

dimensional plane, or (iii) a continuous three-dimensional volume, is defined; defining the boundaries of the display so that a real display space comprising (i) a continuous one-dimensional line, or (ii) a continuous two-dimensional plane, or (iii) a continuous three-dimensional volume is defined; and warping the geometry of the real display space so that the real display space fits optimally within the boundaries of the virtual display space. These method steps are not shown or disclosed in Filo.

Claim 18 has now been amended to require that the boundaries of the set of positions of the pointing device can assume are obtained by querying the user to point to the boundaries. Claim 18 is believed to be allowable over the prior art.

Claim 19 has been amended to now require that the boundaries of the set of positions of the pointing device can assume are obtained by the contour or the periphery of the display as the display is viewed by the sensor or camera. This feature is not shown or disclosed in the Filo patent.

Claim 20 has also been amended to require that at least one special display image is used for established a mapping between the sets of the positions that the pointing device can assume in addressing a set of corresponding points on the display. The feature is not shown or disclosed in the Filo patent.

The rejection of claim 22 is traversed. The Examiner states that the claim 22 is similar in scope to claim 11 with the exception that the method is for detecting the display perspective which is inherent when there is already a method for detecting the pointing device in an interactive virtual world environment and is therefore rejected under similar rationale. Claim 22 has been amended to put in proper method format. However, the substance of claim 22 has not been amended. In the Filo patent, the camera is simply recording the changes in the Command Room and is not being used to determine the location of the pointing device or the display. Therefore, claim 22 is distinguished from the Filo patent.

Claim 25 has been amended to now require that the display refers to a predetermined range of positions specified by the user that the pointing device can assume. In one aspect of the present invention, the range of positions that the pointing device can assume are within the white area shown in Figure 22c. The user

sets these at the four corners as shown in Figure 22b. This procedure is disclosed in Figure 17 at Item 112.

Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Filo in view of Edwards et al.(U. S. Patent No. 6,459,442). The Examiner alleges that it would have been obvious to an artisan at the time of the invention to include Edwards' teaching of a computer aided design tool wherein the pointing device to be used to define a vector on the plane of the display that indicates direction and magnitude relative to or with respect to an item on the display or a region of the display to Filo's teaching of a system for interacting with displays that include drawing capabilities to provide users with an environment capable of incorporating multiple applications and capabilities to enhance a user's individual task. The rejection of claim 7 is traversed. The Edwards patent has a touch sensitive display so that the determination of the pointing device position or motion is directly obtained from the touch sensitive sensor. There is no image acquisition from the remote camera or sensor as the present invention discloses and claims. Therefore, claim 7 is believed to be allowable.

Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Filo and in view of Applicant's admitted prior art. The Examiner alleges that it would have been obvious to an artisan at the time of the invention to include Applicant's admitted prior art teaching of a system for correcting the offsets between the position of the pointing device and the position of the pointer icon on the display to Filo's method of a system for sensing the pointing device's position relative to the position of a pointer icon on the display in order to reduce the margin of error concerning the position of the pointing device and the position of a pointer icon on the display. The present invention, and particularly claim 9, involves detecting a pointer icon on the display (in addition to the display and the pointing device) so that minute adjustments can be made to make sure that the pointer icon and the pointing device are overlapping. The prior art does not show or disclose making corrections let alone detecting the icon or the pointing icon on the display. Therefore, claim 9 is also believed to be allowable over the prior art.

The Amendment to the claims should place this case in condition to passing to issue. Such action is requested.

Respectfully submitted,

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